DNA Modeling

PART 1: DNA STRUCTURE

1. Each group has 1 page with 15 nucleotides of each of the **4 nucleotides** that make up **DNA**.

2. Determine the correct **name** of each nucleotide, cut out the nucleotides, and organize by nucleotide name (T for Thymine, A for Adenine, etc.) with color-coding also. See next step as you don't need to use all nucleotides.

3. Develop any DNA sequence that uses a mixture of the 4 different nucleotides, but it only needs to be **15 nucleotides long for each strand**. Write the sequence out on a separate paper. Be sure to label 5' and 3' ends of both strands.

4. Model your sequence using all the correct terminology (anti-parallel, 5', 3' rules, basic base-pairing rules). Glue the paper cutouts onto the back of the paper where you wrote your sequence. Be sure to draw in where the hydrogen bonds are and the proper number of hydrogen bonds.

PART 2: DNA REPLICATION

1. You will use fruit loops to represent nucleotides in this model. Choose 5 colors to represent each nucleotide (ATGCU) and make a color key on a piece of paper for reference.

2. Write a double stranded DNA sequence of your choice that is 20 base pairs long and contains a mixture of the 4 DNA nucleotides and then choose & write the 3' and 5' ends. Use the provided pipe cleaners to put the loops onto to match your written sequence.

3. List the steps and any necessary enzymes/proteins that perform these steps. Include the differences in replication for the Lagging strand versus the Leading strand.

4. Show the final products, indicating where the original DNA is and where the newly synthesized DNA is.

Model all of the above components in part 2 by:

a. Taking still frame pictures you must print in color

b. Drawing out each step in color

c. Recording a video that will be published on the wikispace.